

CLAIMS:

1. A method for reducing emissions of an internal combustion engine with electromechanically actuated valves, the method comprising:
  - processing a signal indicative of a request to stop said engine;
  - adjusting a valve opening position of at least a cylinder based on said processed signal; and
  - operating said cylinder for at least one intake stroke of said cylinder after said valve opening position adjustment.
2. The method of Claim 1 wherein said valve is an intake valve.
3. The method of Claim 2 wherein said intake valve opening position is between 30 and 180 crank angle degrees after top-dead-center of the intake stroke of said cylinder.
4. The method of Claim 1 wherein said valve is an exhaust valve.
5. The method of Claim 4 wherein said exhaust valve opening position is between 0 and 120 crank angle degrees after top-dead-center of the exhaust stroke of said cylinder.
6. The method of Claim 1 wherein spark timing is adjusted based on said processed signal.

7. A method for reducing emissions of an internal combustion engine with electromechanically actuated valves, the method comprising:

5 processing a signal indicative of a request to stop said engine;

adjusting a valve opening position of at least a cylinder based on said processed signal;

10 adjusting a valve closing position of at least a cylinder based on said adjusted valve opening position; and

operating said cylinder for at least one intake stroke of said cylinder after said valve opening and said valve closing position adjustments.

15 8. The method of Claim 7 wherein said valve is an intake valve.

9. The method of Claim 8 wherein said intake valve opening position is between 30 and 180 crank angle  
20 degrees after top-dead-center of the intake stroke of said cylinder.

10. The method of Claim 7 wherein said valve is an exhaust valve.

25 11. The method of Claim 10 wherein said exhaust valve opening position is between 0 and 120 crank angle degrees after top-dead-center of the exhaust stroke of said cylinder.

30 12. The method of Claim 7 wherein spark timing is adjusted based on said processed signal.

13. A method for reducing emissions of an internal combustion engine with electromechanically actuated valves, the method comprising:

processing a signal to stop said engine;

5 adjusting a valve opening position of at least a cylinder based on said processed signal;

adjusting fuel injected into said cylinder to produce a lean mixture in said cylinder; and

10 operating said cylinder for at least one intake stroke of said cylinder after said valve opening position adjustment and said fuel adjustment.

14. The method of Claim 13 wherein said valve is an intake valve.

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15. The method of Claim 14 wherein said intake valve opening position is between 30 and 180 crank angle degrees after top-dead-center of the intake stroke of said cylinder.

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16. The method of Claim 13 wherein said valve is an exhaust valve.

17. The method of Claim 13 wherein spark timing is  
25 adjusted based on said processed signal.

18. A method for reducing emissions of an internal combustion engine with electromechanically actuated valves, the method comprising:

- processing a signal to stop said engine;
- 5 adjusting a valve opening position of at least a cylinder based on said processed signal and an estimated fuel puddle mass; and
- operating said cylinder for at least one intake stroke of said cylinder after said valve opening position
- 10 adjustment and said fuel adjustment.

19. The method of Claim 18 wherein spark timing is adjusted based on said processed signal.

15 20. The method of Claim 18 wherein said valve is an intake valve.

21. A computer readable storage medium having stored data representing instructions executable by a computer

20 to control an internal combustion engine to control electromechanically actuated valves, the storage medium comprising:

- instructions for processing a signal indicative of a request to stop said engine;
- 25 instructions for adjusting a valve opening position of at least a cylinder based on said processed signal; and
- instructions for operating said cylinder for at least one intake stroke of said cylinder after said valve
- 30 opening position adjustment.

22. A computer readable storage medium having stored data representing instructions executable by a computer to control an internal combustion engine, the storage medium comprising:

5           instructions for retarding ignition timing during an engine shut-down on at least one of a group of final combustion events during the shut-down to increase exhaust temperature thereby improving emissions on a subsequent engine re-start.

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23. The computer readable storage medium of Claim 22 further comprising instructions for adjusting a valve amount of an electromechanical valve of the engine during said engine shut-down on at least one of said group of  
15 final combustion events during the shut-down to increase exhaust temperature thereby improving emissions on said subsequent engine re-start.

24. The computer readable storage medium of Claim 23  
20 wherein said electromechanical valve of the engine operates to adjust exhaust valve timing.

25. The computer readable storage medium of Claim 23  
25 wherein said electromechanical valve of the engine operates to adjust intake valve timing.

26. The computer readable storage medium of Claim 23  
wherein said electromechanical valve of the engine  
operates to adjust exhaust valve lift.

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27. The computer readable storage medium of Claim 23  
wherein said electromechanical valve of the engine  
operates to adjust exhaust valve opening duration.

28. The computer readable storage medium of Claim 23 wherein said electromechanical valve of the engine operates to adjust exhaust closing timing.

5 29. The computer readable storage medium of Claim 22 wherein said at least one of said group of final combustion events includes a final cylinder to perform combustion.

10 30. The computer readable storage medium of Claim 22 wherein said at least one of said group of final combustion events includes a final two cylinders to perform combustion.